

# Practice Board Exam Questions

## Hypertrophic Cardiomyopathy & Phenocopies

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1. 33 year old male with a history of hypertrophic cardiomyopathy presents with increasing symptoms of shortness of breath (NYHA III). There was no continuous wave Doppler interrogation of the left ventricular outflow tract (LVOT) obtained, however, the peak mitral regurgitation velocity was obtained at 720 cm/sec. The systolic blood pressure was 115mmHg. Assuming a left atrial pressure of 15mmHg, what is the LVOT peak instantaneous systolic gradient?



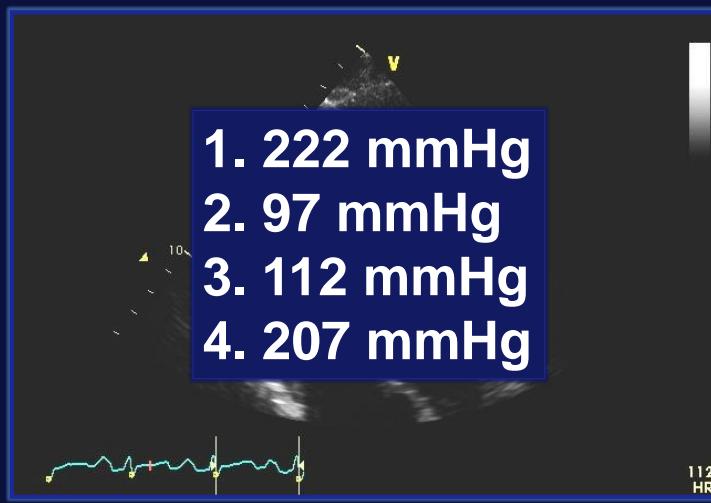
# What is the LVOT Gradient?

MR Velocity = 720 cm/sec

Systolic BP = 110 mmHg

Left Atrial Pressure = 15 mmHg

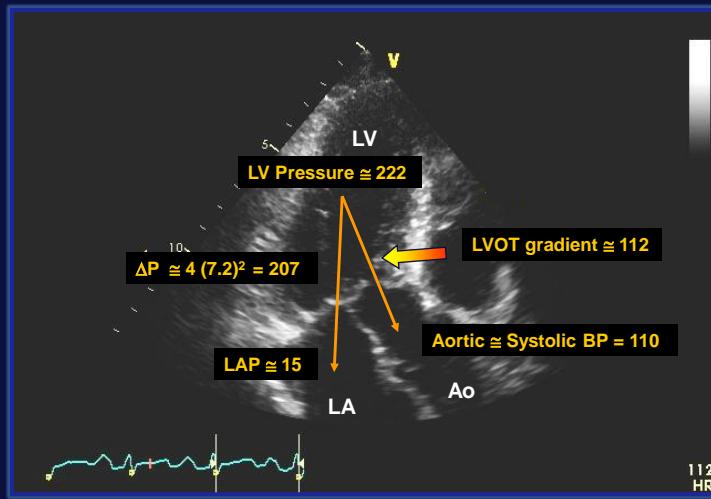
- 1. 222 mmHg
- 2. 97 mmHg
- 3. 112 mmHg
- 4. 207 mmHg



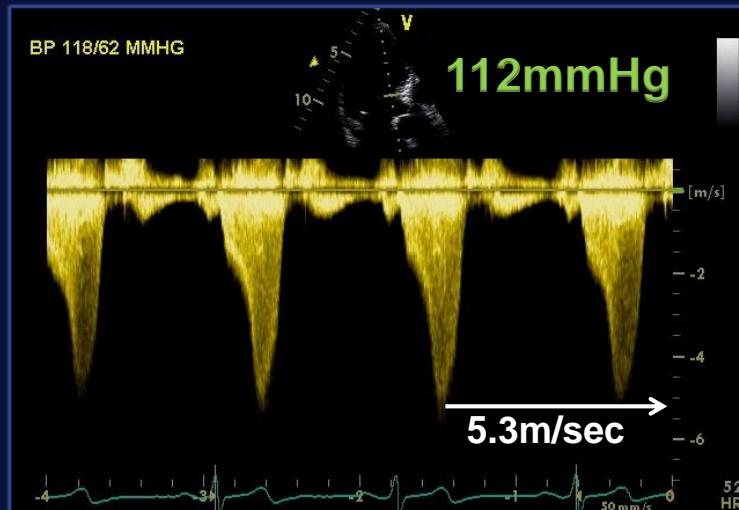
## Estimating LVOT Gradient Using the Mitral Regurgitation Peak Velocity

MR Velocity = 7.2 m/sec

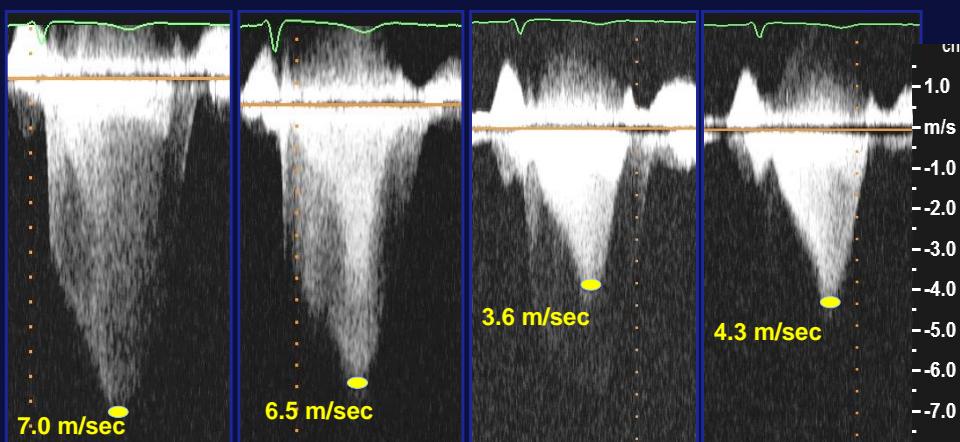
Systolic BP = 110 mmHg



# Gradient: Amyl Nitrite



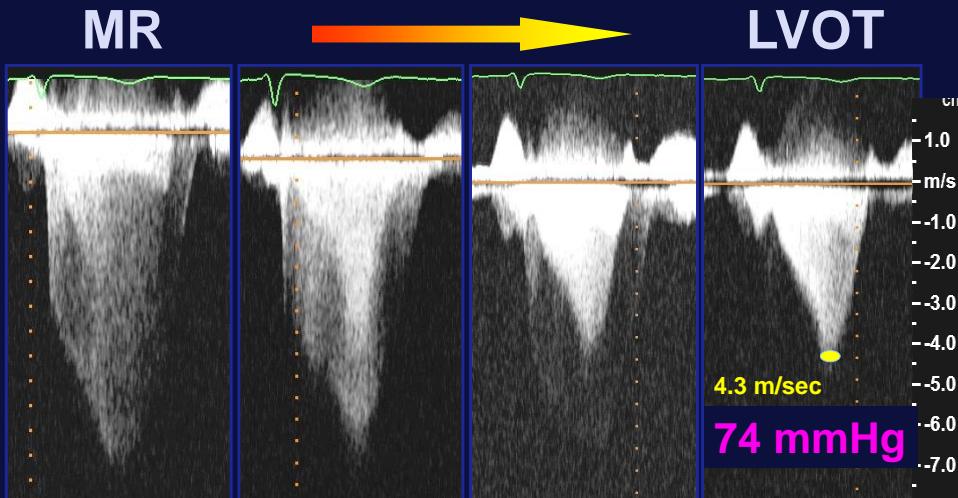
2. You are called to the ICU to perform an echocardiogram on a 72 year old male with HCM being evaluated for hypotension. The arterial line is recording a systolic blood pressure of 89 mmHg. Your echocardiogram records the following continuous wave Doppler profiles from the left ventricle. Assuming a left atrial pressure of 15mmHg you conclude that the arterial line is providing an inaccurate reading and you report an estimated systolic blood pressure of xx mmHg?



## What Is The Systolic BP?

- 1. 137 mmHg**
2. 89 mmHg
3. 95 mmHg
4. 122 mmHg
5. 211 mmHg

### LVOT Obstruction vs Mitral Regurgitation

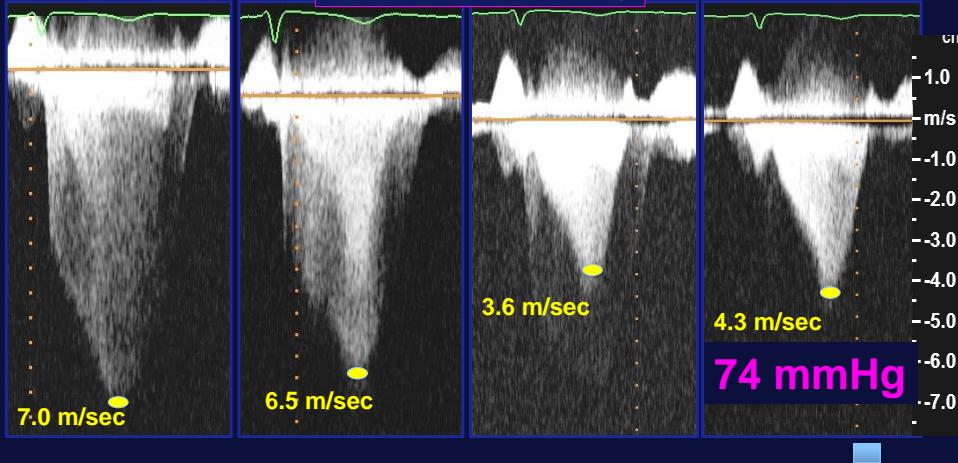


# What Is The Systolic BP?

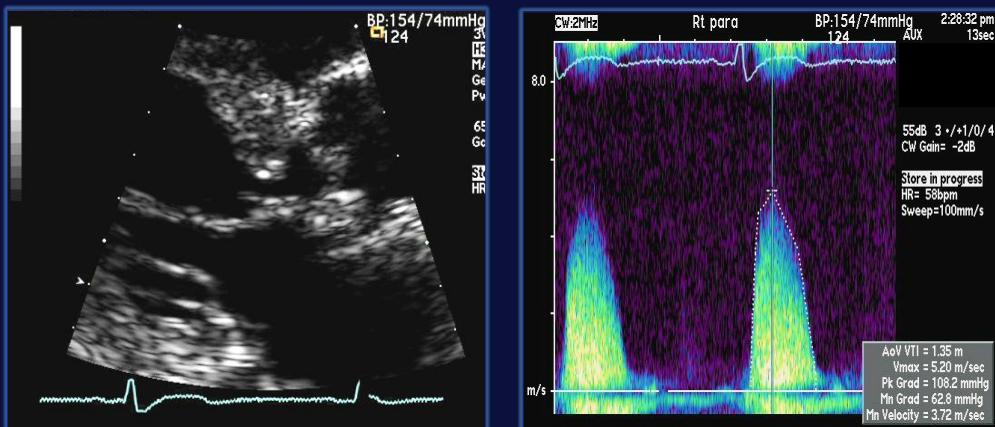
Left Atrial Pressure = 15 mmHg

$$4(7.0)^2 + 15 - \text{SBP} = 74 \text{ mmHg}$$

$$\text{SBP} = 137 \text{ mmHg}$$



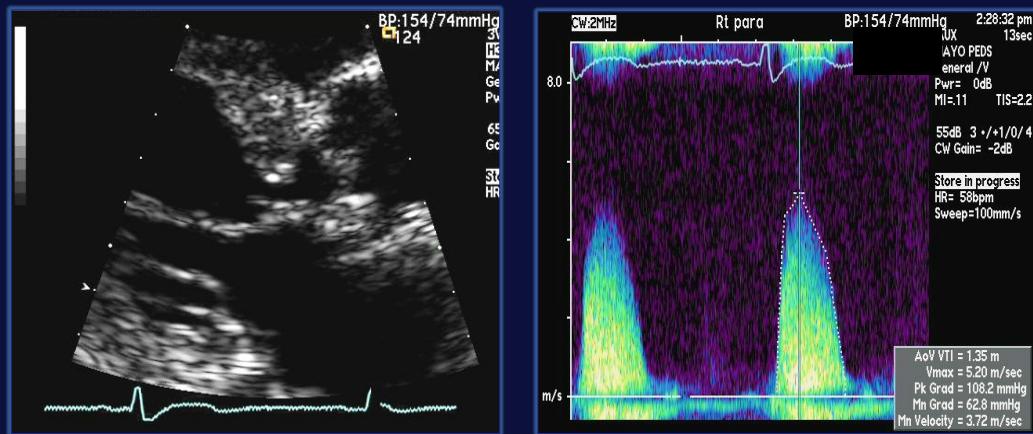
3. A 71 year old women, has had a murmur since childhood and was diagnosed with hypertrophic cardiomyopathy. She is increasingly symptomatic with shortness of breath with minimal exertion (NYHA III). She is referred for consideration of surgical myectomy. You perform a transthoracic echocardiogram and from the findings you make the following conclusion?



- A. Confirm the diagnosis of hypertrophic cardiomyopathy and proceed with myectomy.
- B. The Doppler signal is mitral regurgitation and the patient may not be a candidate for a myectomy.
- C. There is valvular aortic stenosis.
- D. There is subvalvular aortic stenosis

## 71 y/o Woman: Murmur Since Childhood; Previously Treated as HCM

### Congenital Fibromuscular Subaortic Stenosis



4. An 18 year old male had an episode of syncope after a blood donation. Because of this event he presented for a pre-participation medical evaluation prior to playing ice hockey at a division 1 college program. Which echocardiographic finding is most consistent with “athletes heart”?

- a. Left ventricular wall thickness to be  $\geq 13\text{mm}$ .**
- b. Left ventricular end-diastolic diameter to be reduced.**
- c. Left ventricular global longitudinal peak systolic strain to be more negative than ( $<$ )  $-16\%$ .**
- d. Abnormal left ventricular filling.**

5. Mitral regurgitation that is secondary to systolic anterior motion of the mitral valve has a jet generally travelling in which direction?

- a. Directed anteriorly.**
- b. Directed infero-laterally.**
- c. Is centrally directed.**
- d. Often produces two distinct mitral regurgitation jets that flow in opposite directions.**

## With SAM the MR Jet Is Directed Infero-laterally

